



AFCTN Test Report

94-093

AFCTB-ID
94-058



TMSS Parsing Test

MIL-M-83495A Fault Reporting

Document Type Definition

MAXIMA Corporation

DISA Contract #DCA100-93-D-0065

Quick Short Test Report

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20 May 1994



Prepared for
Electronic Systems Center
Air Force CALS Program Office
HQ ESC/AV-2
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20 May 1994

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Air Force CALS Test Bed

Notification of Test Results

20 May 1994

This notice documents the results of an Air Force CALS Test Bed (AFCTB) Quick Short Test Report (QSTR) evaluation of data submitted by:

MAXIMA Corporation

Identified as follows:

| | |
|-----------------|--|
| Title: | MIL-M-83495A Fault Reporting DTD Parsing Test |
| Program: | DISA |
| Program Office: | DISA |
| Contract No.: | DCA100-93-D-0065 |
| QSTR No.: | AFCTB-ID 94-058 |

Received on the following media: **3.5" Diskette**

The results of the QSTR evaluation are as follows:

| | |
|-----------------------------|-------------|
| MIL-STD-1840A Media Format: | N/A |
| MIL-D-28000A IGES: | N/A |
| MIL-M-28001B SGML: | Pass |
| MIL-R-28002A Raster: | N/A |
| MIL-D-28003 CGM: | N/A |

Formal results with associated disclaimer are documented and available from the AFCTB.

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1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of this informal test is to analyze Air Force Document Type Definitions (DTDs) for Standard Generalized Markup Language (SGML) syntax, using several commercial and public domain SGML parsers, prior to placing them in the Defense Information Systems Agency (DISA) Asset Source for Software Engineering Technology (ASSET) repository.

2. Test Parameters

Test Plan: AFCTB 94-058

Date of Evaluation: 20 May 1994

Evaluator:
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Data Originator:
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Beavercreek OH 45431
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Data Description: Technical Manual Test
1 DTD

Data Source System:
Text/SGML
SOFTWARE
Unknown

Evaluation Tools Used:

MIL-M-28001 (SGML)
PC 486/50
Exoterica XGMNormalizer v1.2e3.2
Exoterica Validator v2.2 exl
McAfee & McAdam Sema Mark-it v2.3
Public Domain sgmls v1.1

Standards Tested: MIL-M-28001B

3. 1840A Analysis

3.1 External Packaging

The 3.5" diskette was hand delivered to the Air Force CALS Test Bed (AFCTB). It was not enclosed in any container.

The files received by the AFCTB were not MIL-STD-1840A. The files were not named per the standard conventions, as the stated purpose of the evaluation was the basic data structure.

4. SGML Analysis

The AFCTB has several parsers available for evaluating submitted DTD and text files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. These products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings unless specified in the report.

The goal was to configure the DTD under analysis as it would normally be used. However, for this analysis it was necessary to modify the DTD adding the "DOCTYPE doc [" statement to the start and the companion "]>" to the end of the DTD under evaluation, as stated in the comments of the DTD. If the parser did not support a formal file pointing to the location of the ISO character sets, this was added.

The DTD under evaluation, MIL-M-83495A, Appendix E, Fault Reporting, called for a companion MIL-M-38784C DTD. MIL-M-38784C, Amendment three DTD, delivered on the same diskette as the DTD to be evaluated, was used. This DTD was used without change except to insert the location of the ISO character set files.

<!-- MIL-M-83495A Fault Reporting DTD -->

D495AE0.ORG --> D784CB0.A3

The following notes apply to the parsing analysis as indicated in the ensuing paragraphs.

- Note 1. Entity parameters defined more than once is a valid SGML construct. The warnings in this analysis do not indicate any problems.
- Note 2. Some of the parsers report mixed content model warnings. The use of such content models is normally unnecessary and therefore not normally recommended. Record boundaries within elements of associated instances may be misinterpreted where a mixed content model exists in the DTD.
- Note 3. The occurrences of warnings "references defined, but not used," appeared because portions of the called DTD, i.e., MIL-M38784C, were not used. They were not used because the entity definitions of the DTD under analysis altered the execution path in the called DTD. The warnings in this analysis do not indicate any problems.

4.1 Exoterica Validator

The DTD file was evaluated using the Exoterica Validator *exl* parser. The basic DTD was modified by placing the concrete syntax file and "<!DOCTYPE doc [" at the start, and the "]>" at the end. The parser reported 85 errors which related to the missing instance and are not considered error for this analysis.

The parser reported 26 total warnings of three types. The first type warning was a parameter entity declared more than once. See Note 1 above.

```
<!-- **Warning** in "i:\dtd\784c.dtd" (entity "%m38784c"), line 37,  
    used in "\xgml\9458.dtd", line 123:  
A parameter entity name has been declared more than once.  
The entity is "%shorttitleuse".  
<!ENTITY % shorttitleuse "IGNORE" >
```

The second type warning related to elements of mixed content model. See Note 2 above.

```
<!-- **Warning** in "\xgml\9458.dtd", line 138:
```

An element with mixed content should permit data characters ("#PCDATA") everywhere.

The element being declared is "CBLOC".

```
<!ELEMENT cbloc      - o  (%text;, cb+) >
```

The first line below shows the initial element definition in the DTD. The second line is the line as shown above, revealing the mixed content occurrence. See Note 2 above.

```
<!ELEMENT cb      - o  (%text;) >  
<!ELEMENT cbloc      - o  (%text;, cb+) >
```

The third type warning related to elements defined but not used in any content model. See Note 3 above.

```
<!-- **Warning** in "\xgml\9458.dtd", line 206:  
An element is not allowed in the document instance because it does not  
appear in any accessible content model or it is completely excluded.  
The element is "ADDRESS".
```

4.2 Exoterica XGML Normalizer

The DTD file was parsed using the Exoterica *XGMLNormalizer* parser. The concrete syntax and "<!DOCTYPE doc [" were added to the start, and "]>" to the end of the file. One warning related to a mixed context model, was issued by this utility. See Note 2 above.

```
C:\XGML\XGMLNORM.EXE --  
Warning on line 138 in file 9458.dtd:  
An element with mixed content does not permit data characters  
everywhere.  
Spaces and line breaks in element 'CBLOC' may be treated as data  
characters, forcing insertion of markup.
```

4.3 Public Domain sgmls

The DTD file was evaluated using the Public Domain *sgmls* parser version 1.1. The file was modified by adding the "<!DOCTYPE doc [" to the start, and "]>" to the end of the file as stated in the comments in the DTD. The D784CB0.A3 file was used as the point to file. Four warnings were reported by the parser, all of which were duplicate definitions. See Note 1 above.

```
sgmls: In file included at \ws\9458.dtd, line 52:  
  Warning at i:\dtd\784c.dtd, line 37 in declaration parameter 4:  
  Duplicate specification occurred for "%shorttitleuse"; duplicate  
  ignored.
```

4.4 Sema Mark-it

The DTD file was evaluated using McAfee & McAdam's *Sema Mark-it* v2.3 parser. The file was modified by adding the concrete syntax and "<!DOCTYPE doc [" to the start, and "]>" to the end of the file. One warning relating to a mixed content model was reported. See Note 2 above.

```
<!--*** file:\xgml\9458.dtd line:138 pos:3897  
Potential problem in the mixed content model of element CBLOC.  
At some location within the model, the entry of separators between tags  
will not always be permitted. It is often possible to fix this problem  
by writing the #PCDATA model token in a repeatable OR group.-->
```

5. Conclusions and Recommendations

The file D495AE0.ORG, MIL-M-83495A, Appendix E, conforms to the SGML syntax of ISO Standard 8879, as required by the CALS MIL-M-28001B specification.

The errors, warnings, and comments reported by the parsers used in this evaluation do not indicate invalid SGML syntax. However, the mixed content model flagged by warnings from three of the five parsers, may cause problems in the use of this DTD. See Note 2, paragraph 4, above.

Recommend the DTD be changed to eliminate the mixed content model. If this is not possible, users should be alerted to the potential problems that may occur in the application of the DTD, and proper guidance should be provided users to avoid the potential problems in the use of this DTD.

6. Appendix A - Detailed SGML Analysis

6.1 Exoterica Validator

```
<!-- **Warning** in "i:\dtd\784c.dtd" (entity "%m38784c"), line 37,
   used in "\xgml\9458.dtd", line 123:
A parameter entity name has been declared more than once.
The entity is "%shorttitleuse".
<!ENTITY % shorttitleuse "IGNORE" >
   ^^^^^^^^^^

-->
<!-- **Warning** in "i:\dtd\784c.dtd" (entity "%m38784c"), line 45,
   used in "\xgml\9458.dtd", line 123:
A parameter entity name has been declared more than once.
The entity is "%shorttitle".
<!ENTITY % shorttitle " " >
   ^^^^^^

-->
<!-- **Warning** in "i:\dtd\784c.dtd" (entity "%m38784c"), line 107,
   used in "\xgml\9458.dtd", line 123:
A parameter entity name has been declared more than once.
The entity is "%frnt".
<!ENTITY % frnt "(idinfo, warnpage?, chginssht?, lep, verstat?,
   ^^^^

-->
<!-- **Warning** in "i:\dtd\784c.dtd" (entity "%m38784c"), line 185,
   used in "\xgml\9458.dtd", line 123:
A parameter entity name has been declared more than once.
The entity is "%chap".
<!ENTITY % chap "({titles;, ((section, section+) | para0+),
   ^^^^

-->
<!-- **Warning** in "\xgml\9458.dtd", line 138:
An element with mixed content should permit data characters ("#PCDATA")
everywhere.
The element being declared is "CBLOC".
<!ELEMENT cbloc      - o  (%text;, cb+) >
   /\

-->
<!-- **Warning** in "\xgml\9458.dtd", line 206:
An element is not allowed in the document instance because it does not
appear in any accessible content model or it is completely excluded.
The element is "ADDRESS".
-->
```

<<<< PART OF MESSAGE TEXT REMOVED HERE >>>>

```
The element is "APPENDIX".  
The element is "BRK".  
The element is "CHGINSSHT".  
The element is "CHGLIST".  
The element is "CHGREC".  
The element is "DOC".  
The element is "DOCPART".  
The element is "FOLDSECT".  
The element is "GLOSSARY".  
The element is "INDEX".  
The element is "INSERTPG".  
The element is "INTRO".  
The element is "PGBRK".  
The element is "PREFACE".  
The element is "REAR".  
The element is "REMOVEPG".  
The element is "SECTION".  
The element is "SHORTTITLE".  
The element is "VOLUME".  
The element is "WARNPAGE".
```

<<<< ERRORS FROM THIS POINT ON RELATE TO NO DOCUMENT INSTANCE AND ARE NOT CONSIDERED
FOR THIS REPORT >>>>

```
<!-- **Error** in "\xgml\9458.dtd", line 207:  
The document instance must consist of at least one tag or data character.  
The following element can start: "DOCFRM".  
-->
```

<<<< PART OF LOG FILE REMOVED HERE >>>>

```
<!-- **Error** in "\xgml\9458.dtd", line 207: An end tag that has been declared inomis  
("-") must not be omitted. The element is "DOCFRM". -->  
<!-- Capacity points/limits:
```

```
TOTALCAP =110250/200000  
ENTCAP =12800/200000  
ENTCHCAP =11526/70000  
ELEMCAP =5440/70000  
GRPCAP =29472/70000  
EXGRPCAP =704/70000  
EXNMCAP =1184/70000  
ATTCAP =31840/200000  
ATTCHCAP =865/70000  
AVGRPCAP =16160/70000  
NOTCAP =96/70000  
NOTCHCAP =163/70000  
IDCAP =0/70000
```

```
IDREFCAP =0/70000
MAPCAP =0/70000
LKSETCAP =0/70000
LKNMCAP =0/70000 -->

<!-- 85 errors and 26 warnings reported. -->
```

6.2 Exoterica XGMLNormalizer Parser

```
C:\XGML\XGMLNORM.EXE --
Warning on line 138 in file 9458.dtd:
An element with mixed content does not permit data characters
everywhere.
Spaces and line breaks in element 'CBLOC' may be treated as data
characters, forcing insertion of markup.
```

6.3 Public Domain sgmls Log

```
sgmls: In file included at \ws\9458.dtd, line 52:
  Warning at i:\dtd\784c.dtd, line 37 in declaration parameter 4:
  Duplicate specification occurred for "%shorttitleuse"; duplicate ignored
sgmls: In file included at \ws\9458.dtd, line 52:
  Warning at i:\dtd\784c.dtd, line 45 in declaration parameter 4:
  Duplicate specification occurred for "%shorttitle"; duplicate ignored
sgmls: In file included at \ws\9458.dtd, line 52:
  Warning at i:\dtd\784c.dtd, line 109 in declaration parameter 4:
  Duplicate specification occurred for "%frnt"; duplicate ignored
sgmls: In file included at \ws\9458.dtd, line 52:
  Warning at i:\dtd\784c.dtd, line 186 in declaration parameter 4:
  Duplicate specification occurred for "%chap"; duplicate ignored
```

6.4 Sema Mark-it Log

```
<!---- file:\xgml\9458.dtd line:138 pos:3897
Potential problem in the mixed content model of element CBLOC.
At some location within the model, the entry of separators between tags
will not always be permitted. It is often possible to fix this problem
by writing the #PCDATA model token in a repeatable OR group.-->
```

```
ATTCNT --100-- 48
ATTSPLEN --960-- 0
BSEQLEN --960-- 0
DTAGLEN --16-- 0
DTEMPLEN --16-- 0
ENTLVL --16-- 2
GRPCNT --32-- 22
GRPGTCNT --96-- 27
GRPLVL --16-- 5
LITLEN --3048-- 730
NAMELEN --32-- 13
NORMSEP --2-- 0
PILEN --240-- 0
TAGLEN --960-- 0
TAGLVL --24-- 0
MSDLVL --24-- 1
TOTALCAP --200000-- 117416
ENTCAP --200000-- 16032
ENTCHCAP --70000-- 10663
ELEMCAP --70000-- 5440
GRPCAP --70000-- 34240
EXGRPCAP --70000-- 736
EXNMCAP --70000-- 1184
ATTCAP --200000-- 31840
ATTCHCAP --70000-- 865
AVGRPCAP --70000-- 16160
NOTCAP --70000-- 96
NOTCHCAP --70000-- 160
IDCAP --70000-- 0
IDREFCAP --70000-- 0
MAPCAP --70000-- 0
LKSETCAP --70000-- 0
LKNMCAP --70000-- 0
```